

In re Patent Application of
MARINET ET AL.
Serial No. 09/995,258
Filed: NOVEMBER 27, 2001

REMARKS

Applicants appreciate the Examiner's careful and thorough examination of the present application, and for the indication of allowable subject matter. Claims 17-49 remain pending in the application. Favorable reconsideration is respectfully requested.

As an initial matter, the Examiner asserts on page 2 of the Office Action that the references listed in the Information Disclosure Statement were "not provided" by Applicants. However, the Examiner's assertion is incorrect as the postcard receipt (see copy attached herewith) from the Patent Office (stamped 1/17/02) indicates that the references filed December 11, 2001 were indeed received by the USPTO. For the Examiner's convenience, Applicants have included additional courtesy copies of the references herewith.

I. The Invention

As shown in FIGS. 1-3, for example, the invention is directed to a random signal generator and method including the use of a folded MOS transistor, whose drain-source current includes a random component, as an electronic noise source. The random signal generator generates a random binary signal from the random component.

II. The Claims are Patentable

Claims 17-32 and 42-49 were rejected in view of Schulz (U.S. 4,905,176) for the reasons set forth on pages 3 and 4 of the Office Action. Applicants contend that Claims 17-32 and 42-49 clearly define over the cited reference, and in

view of the following remarks, favorable reconsideration of the rejection under 35 U.S.C. §102 is requested.

Independent Claim 17 is directed to a random signal generator including an electronic noise source comprising a folded MOS transistor having a drain-source current with a random component, and a circuit for generating a digital signal based upon the random component. Independent Claim 42 is a method counterpart to independent Claim 17. Independent claim 25 recites a plurality of random signal generators as in Claim 17, and a logic circuit for combining the digital signals for generating a digital number. It is these combinations of features which are not fairly taught or suggested in the cited reference and which patentably define over the cited reference.

The Schulz patent is directed to a very large scale integrated (VLSI) compatible, random number generator. Invulnerability to cryptographic attack is based upon a low frequency sampling of the output of a pseudo-random number generator which is operated at a varying frequency from a free-running ring oscillator. In a first embodiment, a free-running ring oscillator is used to drive a sampled linear feedback shift register. The asynchronous, serial pseudo-random number output from the linear feedback shift register is sampled periodically, thereby introducing randomly occurring deviations from the pseudo-random number sequence. A variation of the free-running ring oscillator is used as the pseudo-random number generator, by introducing into the feedback loop of the ring oscillator, an exclusive OR circuit which is connected so that the ring oscillator thereby produces a serial, pseudo-random number sequence. Additional

uncertainty in the sequence of random numbers produced by the free-running pseudo-random number generator, is caused by the race condition which occurs at the inputs to the exclusive OR connected in the circuit.

The Examiner specifically cites to the Schulz patent at column 4, lines 4-53 as disclosing the random number generator including a folded MOS transistor as claimed. However, there is no such disclosure or teaching in the Schulz patent at all, much less at the portions relied upon by the Examiner. Accordingly, Applicants maintain that the Examiner has misinterpreted the cited reference. Specifically, Applicants note that in Schulz, a variation of the free-running ring oscillator is used as the pseudo-random number generator, by introducing into the feedback loop of the ring oscillator, an exclusive OR circuit which is connected so that the ring oscillator thereby produces a serial, pseudo-random number sequence. Indeed, there is no folded MOS transistor at all, let alone a folded MOS transistor having a drain-source current with a random component, as claimed. The Examiner is directed to page 6, lines 9-14 and page 9, line 4 through page 10, line 6 of the present specification, for the associated description of a folded MOS transistor.

As the Examiner is aware, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim.

There is simply no teaching or suggestion in the cited reference to provide the combination of features as claimed. Accordingly, for at least the reasons given above,

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Applicants maintain that the cited reference does not disclose or fairly suggest the invention as set forth in independent Claims 17, 25 and 42. Furthermore, no proper modification of the teachings of this reference could result in the invention as claimed. Thus, the rejection under 35 U.S.C. §102(b) should be withdrawn.

It is submitted that the independent claims are patentable over the prior art. In view of the patentability of the independent claims, it is submitted that their dependent claims, which recite yet further distinguishing features are also patentable over the cited references for at least the reasons set forth above. Accordingly, these dependent claims require no further discussion herein.

III. Request for Telephone Interview

After considering the arguments set forth above, if the Examiner disagrees with Applicants position, he is respectfully requested to contact the undersigned attorney by telephone to arrange an interview to discuss the rejection and the characterization of the Schulz reference.

IV. Conclusion

In view of the foregoing remarks, it is respectfully submitted that the present application is in condition for allowance. An early notice thereof is earnestly solicited. If, after reviewing this Response, there are any remaining informalities which need to be resolved before the application can be passed to issue, the Examiner is invited and

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respectfully requested to contact the undersigned by telephone
to resolve such informalities.

Respectfully submitted,



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